

REMARKS

This application has been carefully reviewed in light of the Office Action dated December 2, 2005. Claims 2 and 4 to 14 are currently in the application, with Claim 9 being the sole independent claim. Claims 1 and 3 have been cancelled without prejudice or disclaimer of the subject matter contained therein. Reconsideration and further examination are respectfully requested.

Claim 1 was objected to for informalities. As mentioned above, Claim 1 has been cancelled thereby rendering the objection moot.

Claims 1, 3 and 4 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,659,931 (“Schmitz”) in view of U.S. Patent No. 5,875,158 (“Schell”); Claim 2 was rejected under § 103(a) over Schmitz in view of Schell and further in view of U.S. Patent No. 5,682,229 (“Wangler”); Claim 5 was rejected under § 103(a) over Schmitz in view of Schell and further in view of U.S. Patent No. 5,262,837 (“Shyy”); Claims 6 and 7 were rejected under § 103(a) over Schmitz in view of Schell and further in view of U.S. Patent No. 5,214,274 (“Yang”); and Claim 8 was rejected under § 103(a) over Schmitz in view of Schell and further in view of U.S. Patent No. 5,953,110 (“Burns”).

Without conceding the correctness of the foregoing rejections, Applicants have cancelled Claims 1 and 3, amended Claims 2 and 4 to 8, and added new Claims 9 to 14. Applicants have reviewed the Office Action, together with the applied references, and respectfully submit that the new and amended claims are patentably distinguishable over the applied references for at least the following reasons.

New independent Claim 9 concerns a photon detector module that includes a photon detector array for detecting photons and generating output signals in response to photon

detection. The module further includes multiple readout electronics integrated circuit chips which each include multiple channels for receiving and processing the output signals generated by the photon detector array. The readout electronics integrated circuit chips are arranged in a stacked configuration with each chip forming one layer of the stacked configuration. The photon detector array is bonded to the stacked configuration and connected to the channels via connections arranged on a lateral surface of the stacked configuration.

The foregoing arrangement provides significant advantages over conventional photon detector modules. For example, stacking the readout electronics integrated circuit chips and connecting the photon detector array to a lateral surface of the stack significantly reduces the overall size of the module. This arrangement and reduction in size optimizes lead lengths between the photo-detectors and the circuitry of the channels, which allows operating speeds to be increased. High operating speeds are necessary to obtain high-speed laser range resolution.

The applied references are not understood to disclose or suggest the foregoing features of the claimed invention. In particular, the applied references are not understood to disclose or suggest a photon detector module having a photon detector array connected to a lateral surface of a stack of readout electronics integrated circuit chips.

Schmitz concerns a multi-layered integrated circuit package in which a detector array is joined to an end portion of the package. As shown clearly in the drawings of Schmitz, the multi-layered integrated circuit package is not arranged as a stack of integrated circuit chips. Rather, Schmitz discloses module layers with each module being formed with a stacked laminated structure to which electronic devices and detector elements are attached. See Schmitz, col. 4, ll. 44 to 66. Accordingly, Schmitz is not understood to disclose or suggest a photon detector array connected to a lateral surface of a stack of readout electronics integrated circuit chips.

Schell, which was applied in combination with Schmitz, concerns a servo control system for an optical information storage device. Schell was cited for its disclosure of circuitry used to detect and retrieve information stored on storage media. Nothing in Schell, however, is understood to disclose or suggest at least the feature of a photon detector array connected to a lateral surface of a stack of readout electronics integrated circuit chips.

Wangler, Yang, Shyy and Burns, which were applied in the rejections of certain dependent claims, are not understood to disclose or suggest anything to remedy the foregoing deficiencies of Schmitz and Schell. In particular, Wangler, Yang, Shyy and Burns, either alone or in combination, are not understood to disclose or suggest at least the feature of a photon detector array connected to a lateral surface of a stack of readout electronics integrated circuit chips.

Therefore, new independent Claim 9 is believed to be allowable over the references applied in the Office Action. The other claims remaining in the application are dependent from independent Claim 9 and therefore are believed to be allowable over the applied references for at least the same reasons. Because each dependent is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.


In view of the foregoing amendment and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

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Applicants' undersigned attorney may be reached in our Orange County office by telephone at (949) 851-0633. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

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